

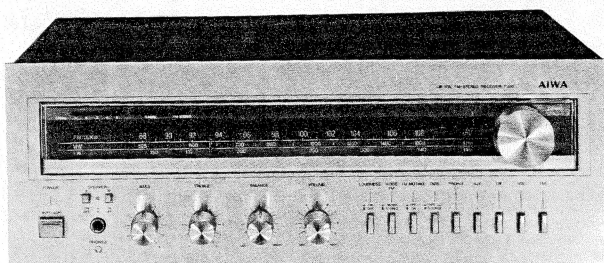
LW/MW/FM STEREO RECEIVER

MODEL NO. AX-7300E,K

AIWA®

[SERVICE MANUAL]

Code No. 06-730-000-18



DATE OF ISSUE 11/1979

SPECIFICATIONS

< General >

Semiconductors:	8 IC's, 1 FET, 28 transistors, 17 diodes, 9 LED's
Power Supply:	AX-7300E AC 220 V 50/60 Hz AX-7300K AC 240 V 50/60 Hz
Power Consumption:	240 W
External Dimensions:	420(W) x 153(H) x 345(D) mm
Weight:	8.5 kg
< Power Amplifier >	
Circuit System:	Complementary SEPP OCL
Power Output:	
According to DIN45 500:	25W + 25W (4 ohms)
20-20 kHz/THD 0.08%:	25W + 25W (8 ohms)
Dynamic Power:	35W + 35W (4 ohms) 30W + 30W (8 ohms)
Output Terminals:	
SPEAKERS	A or B 4 ~ 16 ohms A + B 8 ~ 16 ohms
HEADPHONES	8 ohms (4 ohms ~ 20 ohms)
Damping Factor:	30 (8 ohms)
< Preamplifier >	
Input Terminals (Sensitivity/Impedance):	
PHONO	2.5 mV/47 k ohms
PHONO Max. Rated Input	125 mV (rms)
AUX	150 mV/47 k ohms
DIN (TAPE PLAY)	150 mV/470 k ohms
Output Terminals (Level/Impedance):	
DIN (TAPE REC OUT)	30 mV/80 k ohms
Frequency Response	
(Input with respect to REC OUT jacks):	
PHONO (RIAA Curve)	30 Hz ~ 15 kHz ± 1 dB
AUX, DIN (TAPE PLAY)	20 Hz ~ 50 kHz
Tone Controls:	BASS ± 10 dB (100 Hz) 400 Hz turnover frequency TREBLE ± 10 dB (10 kHz) 2.5 kHz turnover frequency
Loudness Response	
(with volume at -40 dB):	+8 dB (100 Hz), +4 dB (10 kHz)
SN Ratio	
According to DIN 45 500	
PHONO	52 dB
AUX, DIN (TAPE PLAY)	52 dB
IHF	
PHONO	72 dB
AUX, DIN (TAPE PLAY)	90 dB

< FM Tuner >

Receiving Frequency Range:	87.6 ~ 108 MHz
50 dB Quieting Sensitivity:	4 μ V (Mono) 44 μ V (Stereo)
Usable Sensitivity:	2 μ V (Mono)
Capture Ratio (IHF):	1.5 dB
Effective Selectivity:	
DIN	55 dB (300 kHz)
IHF	65 dB (400 kHz)
SN Ratio:	
IHF	73 dB (Mono) 68 dB (Stereo)
Frequency Response:	30 Hz ~ 15 kHz
Distortion:	0.4% (stereo), 0.25% (mono)
Separation:	40 dB (at 1 kHz)
Image Ratio:	60 dB
IF Rejection Ratio:	65 dB
Antenna Input Impedance:	300 ohms (balanced), 75 ohms (unbalanced)
Spurious Rejection:	80 dB
AM Suppression:	50 dB
IF Frequency:	10.7 MHz

< AM Tuner >

Receiving Frequency Range:	MW 530 ~ 1,605 kHz LW 150 ~ 340 kHz
Sensitivity (IHF):	MW 300 μ V/m (built-in bar antenna) 30 μ V (external antenna terminal) LW 1,000 μ V/m (built-in bar antenna) 50 μ V (external antenna terminal)
Selectivity:	30 dB
Distortion:	1%
IF Rejection:	35 dB
Built-in Antenna:	Ferrite bar antenna
External Antenna Terminal:	Unbalanced
Image Ratio:	MW 40 dB LW 50 dB
SN Ratio:	50 dB
IF Frequency:	455 kHz

- The specifications and external appearance of this set are subject to change without prior notice.

DISASSEMBLY INSTRUCTIONS (AX-7300E, K)

1. To Remove Cabinet

- 1) Remove 7 screws.
(Refer to Figure 1)

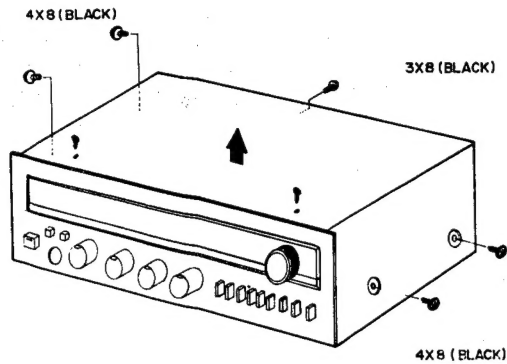


Fig. 1

4. To Remove Fuse Circuit Board

- 1) Remove 4 screws.
(Refer to Figure 4)

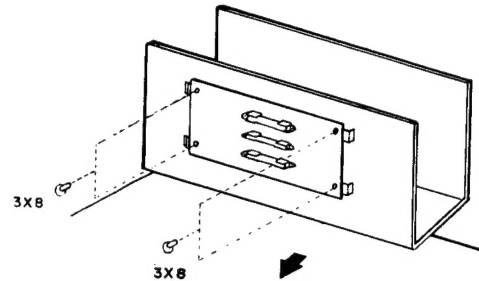


Fig. 4

2. To Remove Front Panel

- 1) Remove 5 screws.
(Refer to Figure 2)

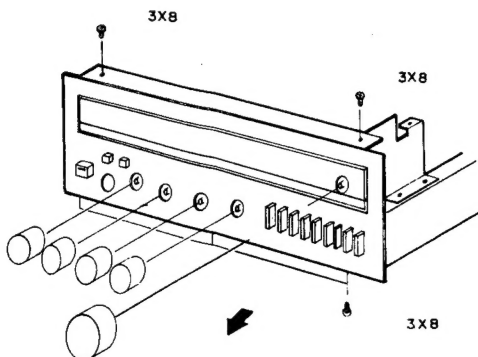


Fig. 2

5. To Remove I.C.

- 1) Remove 2 screws.
2) Remove 1 Bracket.
(Refer to Figure 6)

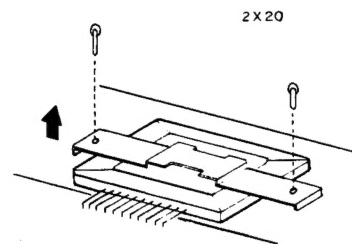


Fig. 5

3. To Remove LED Circuit Board

- 1) Remove 5 screws.
(Refer to Figure 3)

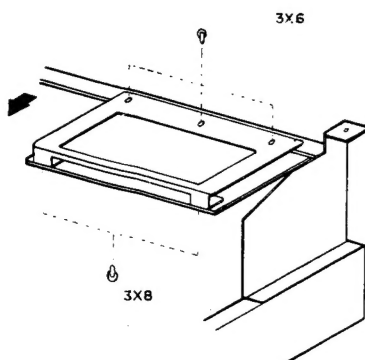


Fig. 3

6. To Remove Bottom Cover

- 1) Remove 14 screws.
(Refer to Figure 5)

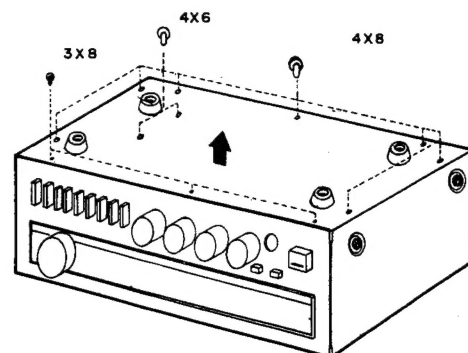


Fig. 6

7. To Remove Switch-2 Circuit Board

- 1) Remove 2 screws.
(Refer to Figure 7)

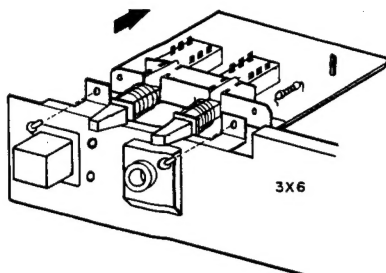


Fig. 7

8. To Remove Function Switch

- 1) Remove 8 screws.
(Refer to Figure 8)

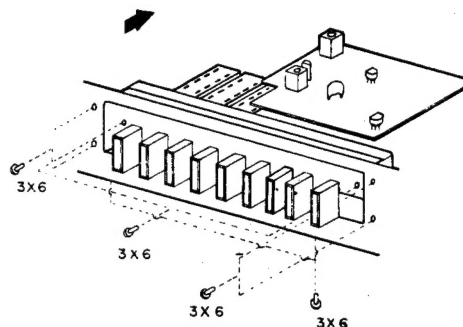
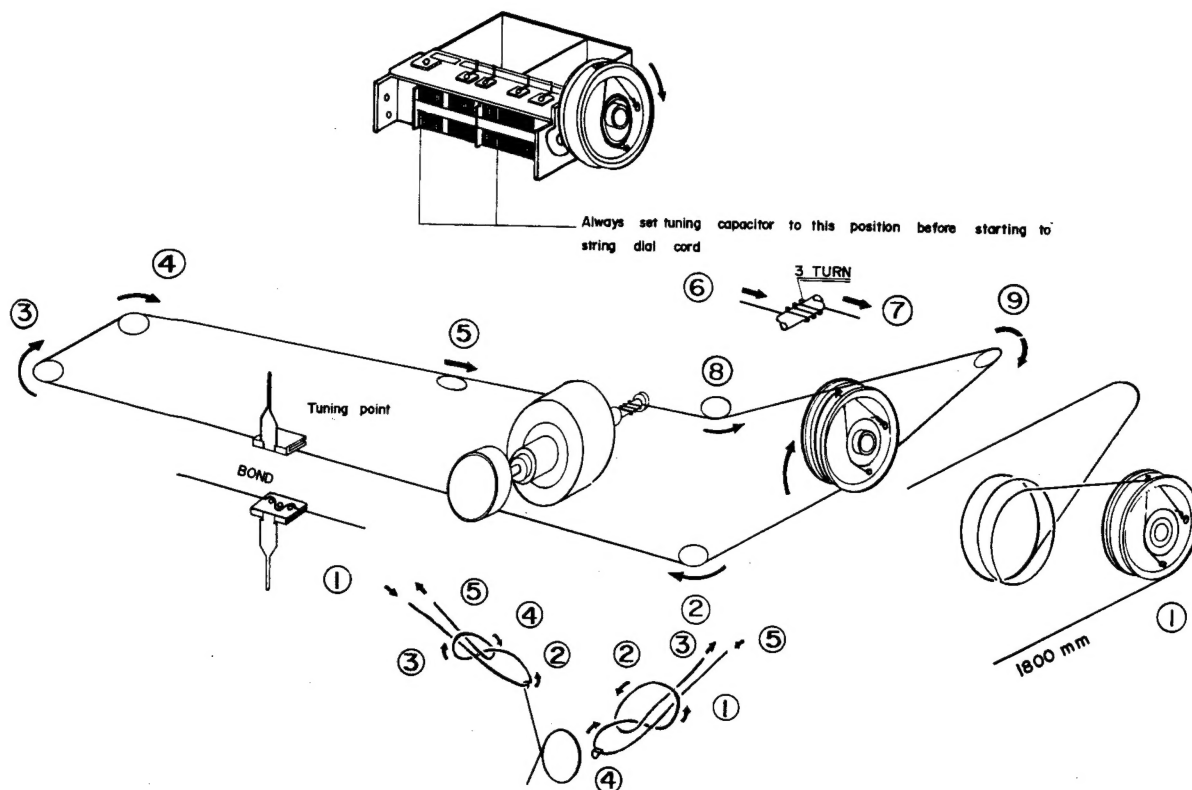
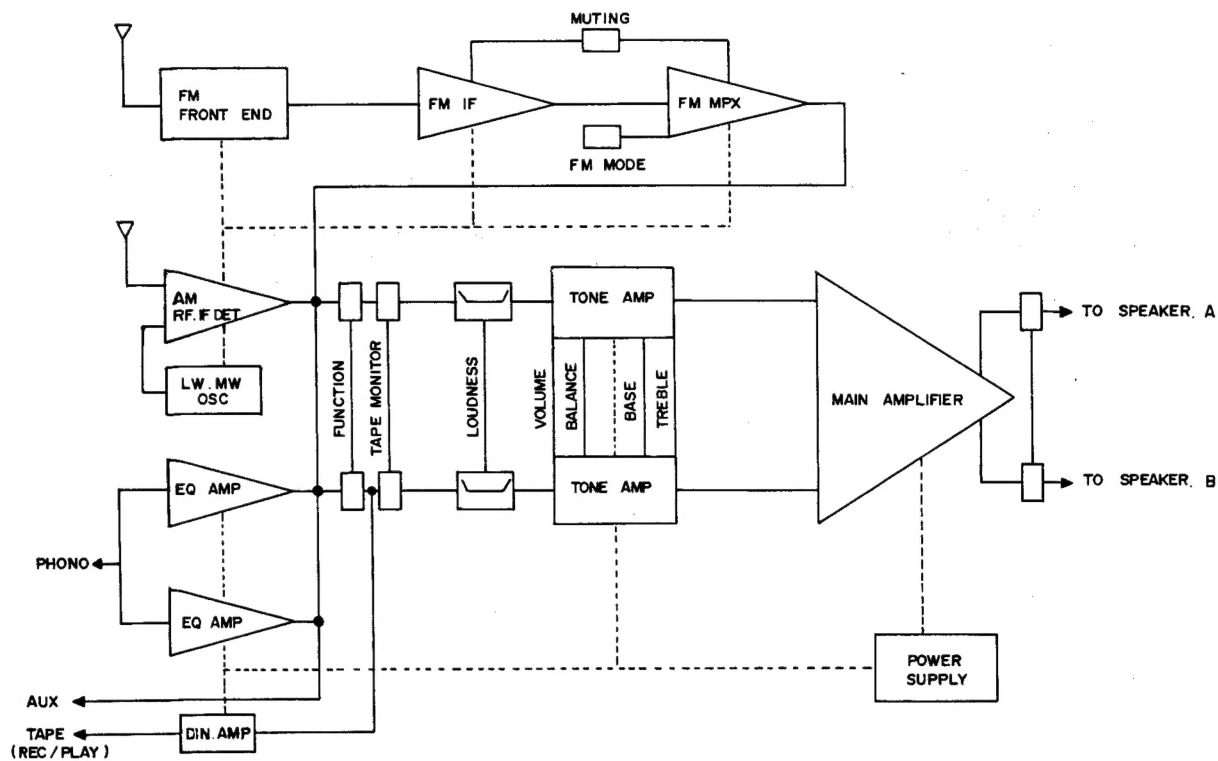


Fig. 8

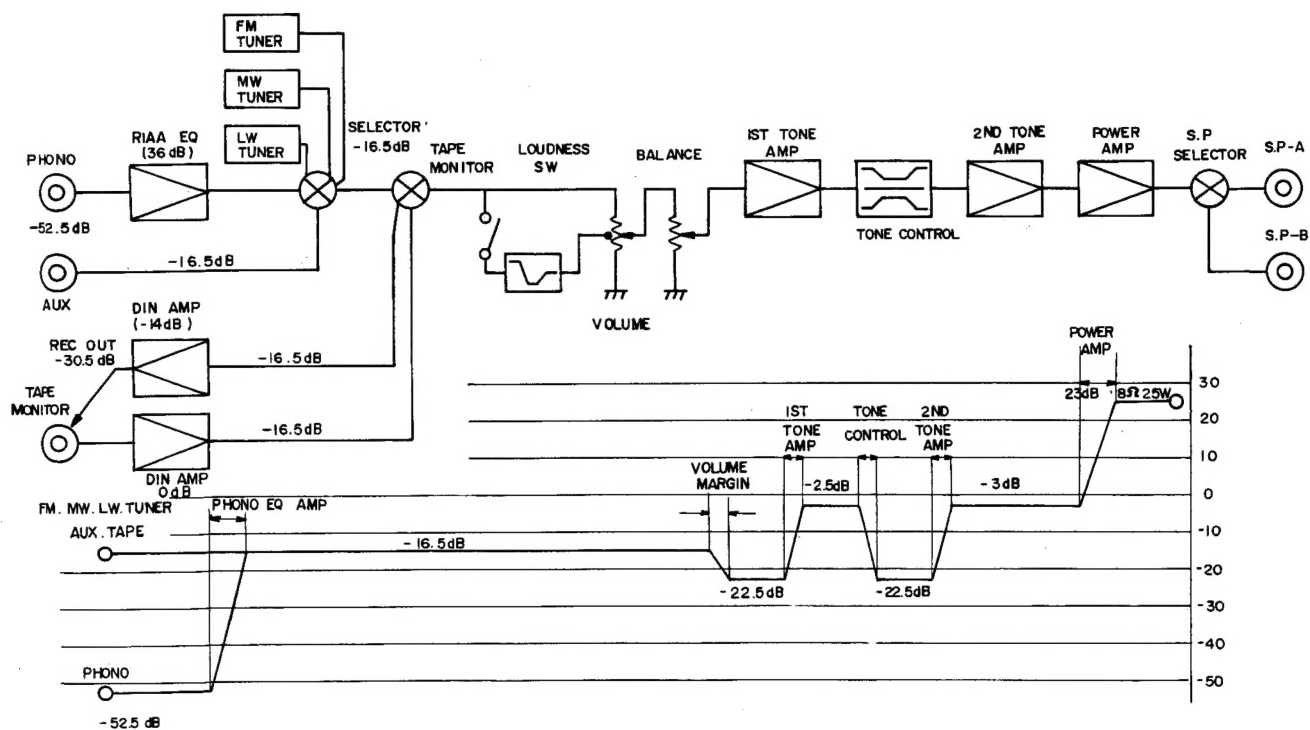
DIAL CORD STRINGING



BLOCK DIAGRAM

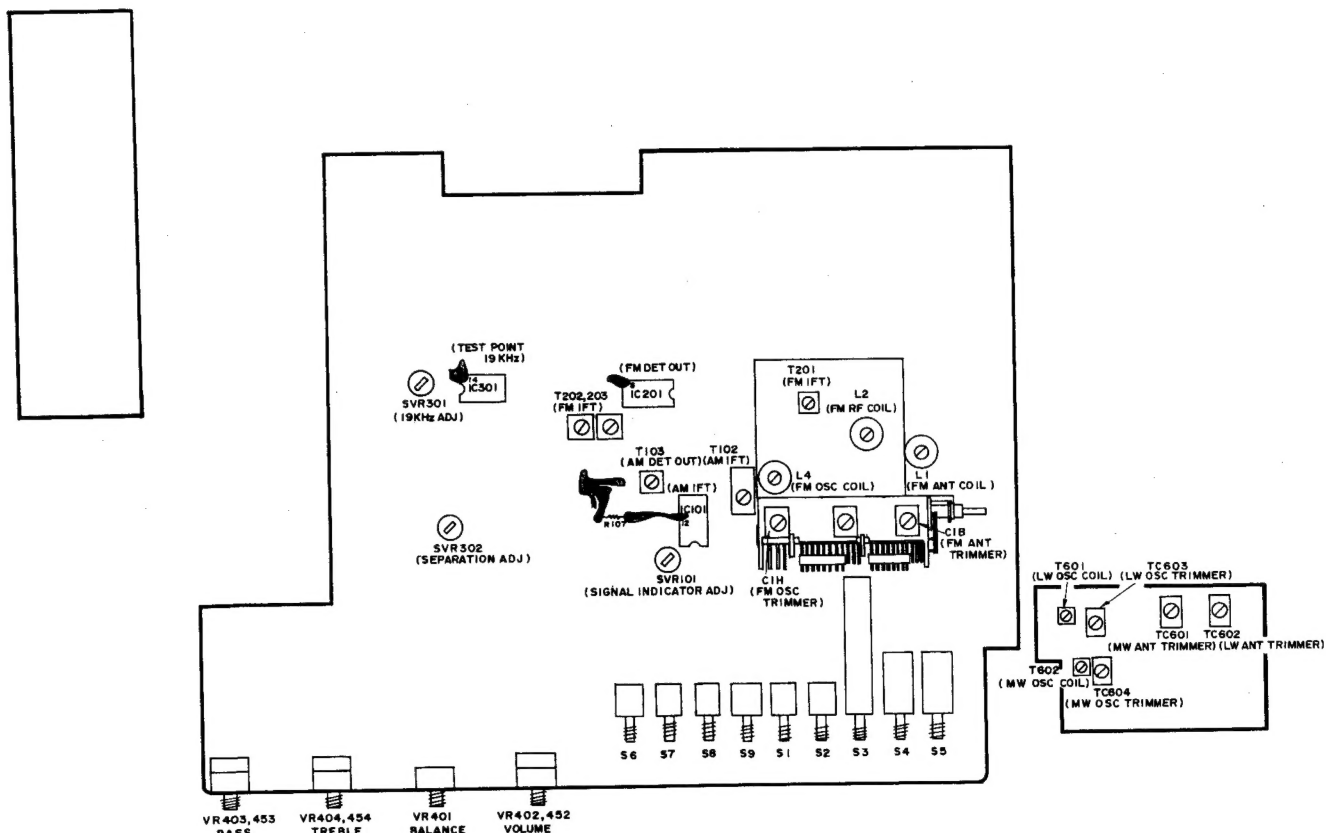


LEVEL DIAGRAM



ADJUSTMENTS

■ Location of Main Parts



1. Instruments Required

Signal Source

1. RF Signal generator (AM, FM).
2. IF sweep generator (Centered 455kHz for AM and 10.7 MHz for FM).

Output Indicator

1. V.T.V.M.
2. Oscilloscope

Regulator Adjusting Steps

For band	For stages on each band
1. LW	1st: IF 2nd: RF frequency range 3rd: RF tracking
2. MW	1st: IF 2nd: RF frequency range 3rd: RF tracking
3. FM	1st: IF 2nd: RF frequency range 3rd: RF tracking

AM-IF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM IF sweep gen.	Sweep centered 455 kHz	Oscilloscope	Min. Freq.	T102 T103	Maximum
	Bar antenna		AM det. output tab			

LW-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust to
	Connect to		Connect to			
1	AM signal gen.	LW 140 kHz (Modulated)	V.T.V.M.	140 kHz (Low end)	T601 (OSC coil)	Maximum
	Loop antenna		AM det. output tab			
2	Loop antenna	360 kHz (Modulated)	AM det. output tab	360 kHz (High end)	TC603 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Loop antenna	200 kHz (Modulated)	AM det. output tab	200 kHz	L101 (ANT coil)	Maximum
5	Loop antenna	320 kHz (Modulated)	AM det. output tab	320 kHz	TC602 (ANT trim.)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.)					

MW-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	AM signal gen.	525 kHz (Modulated)	V.T.V.M.	525 kHz (Low end)	T602 (OSC coil)	Maximum
	Loop antenna		AM det. output tab			
2	Loop antenna	1630 kHz (Modulated)	AM det. output tab	1630 kHz (High end)	TC604 (OSC trim.)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Loop antenna	600 kHz (Modulated)	AM det. output tab	600 kHz	L101 (ANT coil)	Maximum
5	Loop antenna	1400 kHz (Modulated)	AM det. output tab	1400 kHz	TC601 (ANT trim.)	Maximum
6	(Repeat steps 4 and 5 to minimize tracking error, and also step 3 if necessary.)					

FM-IF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		Connect to			
1	FM IF sweep gen.	Sweep centered 10.7 MHz	Oscilloscope	Max. Freq.	T201 T202	Max. Symmetrical response, equal heights
	113 (FM IF input)		FM det. output tab			
2	113 (FM IF input)	Sweep centered 10.7 MHz	FM det. output tab	Max. Freq.	T203	Symmetrical response, centered 10.7 MHz
3	(Repeat 1 and 2 to obtain a balanced "S" curve linearity.)					

FM-RF Alignment

Step	Signal source	Set signal to	Alignment indicator	Set radio dial to	Adjust	Adjust for
	Connect to		connect to			
1	FM signal gen.	87.5 MHz (Modulated)	V.T.V.M.	87.5 MHz (Low end)	L4 (OSC coil)	Maximum
	Antenna terminal		FM det. out put tab			
2	Antenna terminal	108.7 MHz (108.0 MHz) (Modulated)	FM det. output tab	108.7 MHz (108.0 MHz) (High end)	C1H (OSC trim)	Maximum
3	(Repeat steps 1 and 2 to obtain frequency range.)					
4	Antenna terminal	90 MHz (Modulated)	FM det. output tab	90 MHz	L1 (ANT coil) L2 (RF coil)	Maximum
5	Antenna terminal	108 MHz (Modulated)	FM det. output tab	108 MHz	C1B (ANT trim.) C1D (RF trim.)	Maximum
6	(Repeat steps 4 and 5, to minimize tracking error, and step 3 if necessary.)					

(): West Germany model

- Separation Adjustment

Settings:

Function switch: FM
 Mode switch: STEREO
 Input signal: 98 MHz, 60 dB
 Modulation: Pilot signal 10%
 Composite signal 90%
 Modulation frequency: 1 KHz
 Adjustment location: SVR 302

Method:

Tune dial to 98 MHz and adjust SVR 302 for maximum separation.

- 19 KHz Adjustment

Settings:

Function switch: FM
 Mode switch: STEREO
 Dial position: Detuned from station
 Adjustment location: SVR 301

Method:

Adjust SVR 301 for 19 KHz \pm 30 Hz frequency at 19 kHz test point.

- Signal Indicator Adjustment

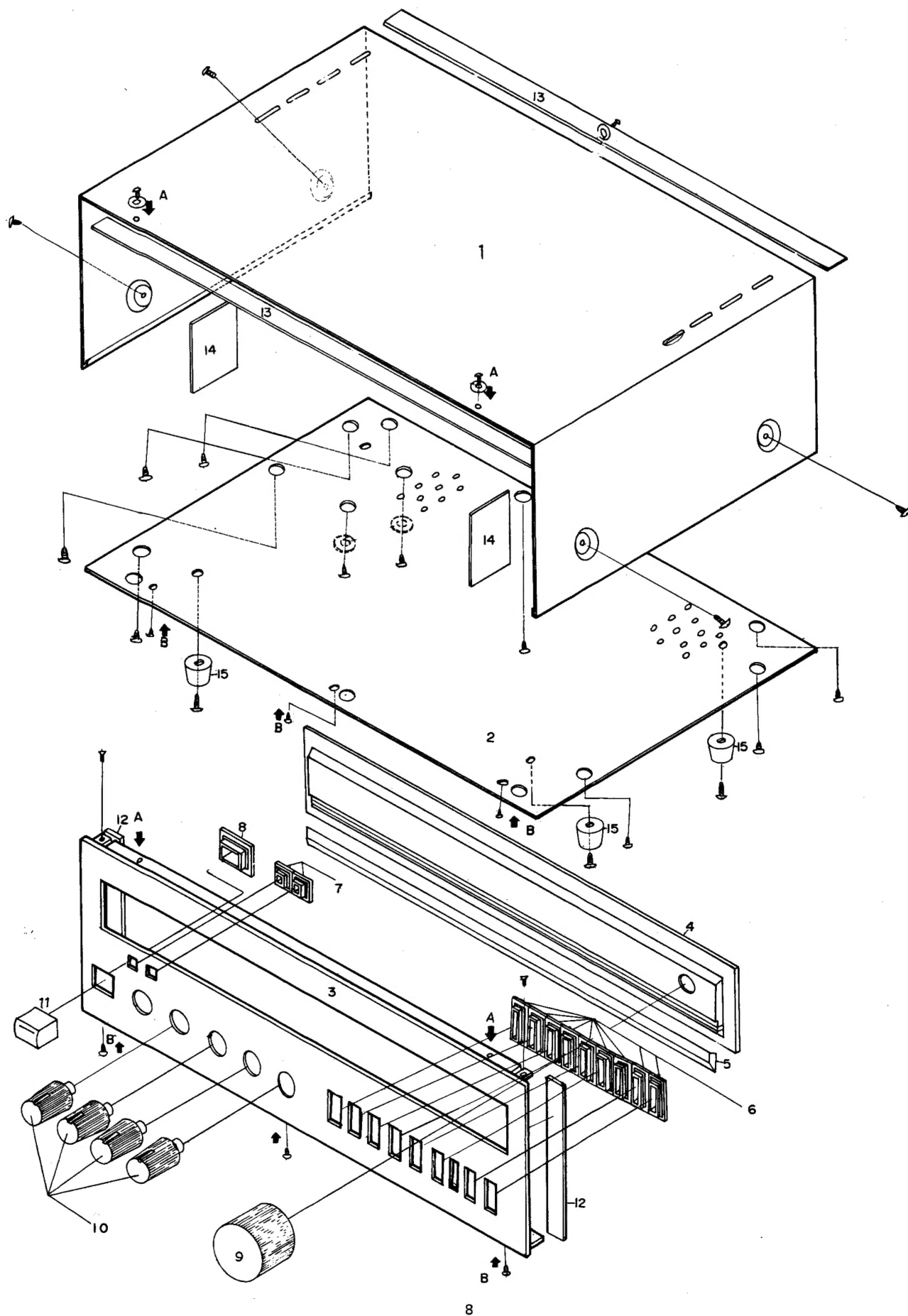
Settings:

Function switch: FM
 Adjustment location: SVR 101

Method:

Adjust SVR 101 for signal indicator LED light up.

EXPLODED VIEW-1



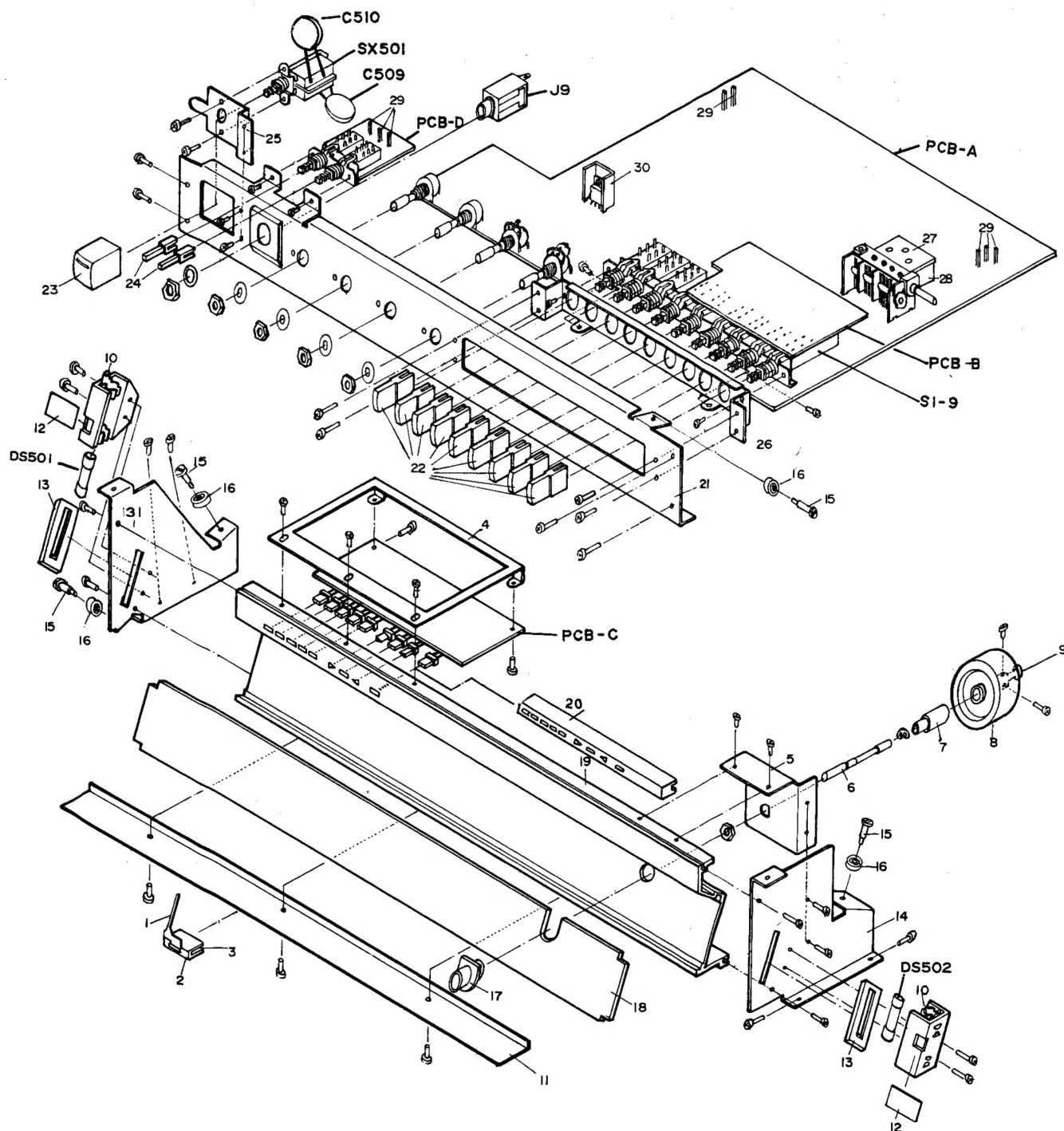
MECHANICAL PARTS

PARTS LIST

■ *mark in this part list shows exclusive part
(which is used) for only Model AX-7300.

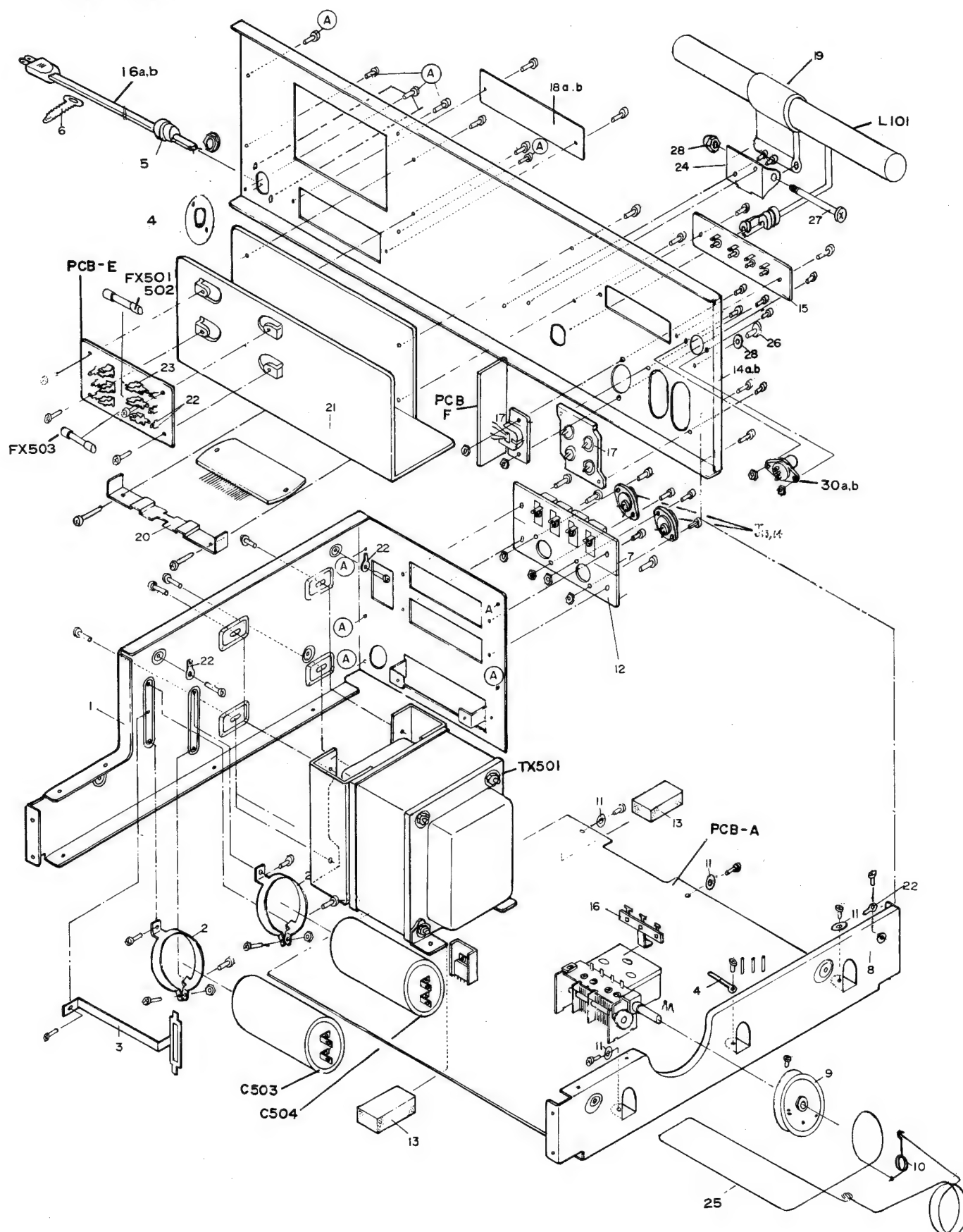
Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1-1	82-744-221-01		Cabinet	*	1	
1-2	82-744-218-01		Chassis, Bottom	*	1	
1-3	82-744-229-01		Panel, Front	*	1	
1-4	82-744-207-01		Window, Dial	*	1	
1-5	82-744-217-01		Mask, Window	*	1	
1-6	82-743-208-01		Guide, Push knob "L"	AX-7700	8	
1-7	82-743-206-01		Guide, Push knob "S"	AX-7700	2	
1-8	82-318-014-01		Guide, Power knob		1	
1-9	82-744-206-01		Knob, Tuning	*	1	
1-10	82-744-003-01		Knob, Volume	*	4	
1-11	82-318-025-01		Knob, Power		1	
1-12	82-744-300-01		Spacer, Panel	*	2	
1-13	82-744-301-01		Spacer, Cabinet	*	2	
1-14	82-744-621-01		Spacer, Lamp	*	2	
1-15	87-085-161-01		Foot		4	

EXPLODED VIEW-2





Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
2-1	82-743-219-01		Tip pointer	AX-7700	1	
2-2	82-743-218-01		Cap pointer	AX-7700	1	
2-3	82-744-302-01		Spacer, Slider	*	1	
2-4	82-744-303-01		Bracket, LED circuit board	*	1	
2-5	82-744-304-01		Bracket, Tuning	*	1	
2-6	82-744-305-01		Shaft, Driving	*	1	
2-7	82-744-306-01		Bushing	*	1	
2-8	82-744-307-01		Flywheel	*	1	
2-9	82-744-308-01		Metal	*	1	
2-10	82-743-210-01		Holder, Lamp	AX-7700	2	
2-11	82-744-309-01		Bracket, Slider	*	1	
2-12	82-744-339-01		Spacer, Lamp	*	2	
2-13	82-744-226-01		Holder, Scale	*	2	
2-14	82-744-213-01		Bracket, Scale R	*	1	
2-15	82-744-310-01		Shaft, Guide B1	*	4	
2-16	82-744-201-01		Pulley A	*	4	
2-17	82-744-210-01		Mask, Tuning	*	1	
2-18	82-744-231-01		Scale, Dial	*	1	
2-19	82-744-212-01		Scale, Back	*	1	
2-20	82-743-209-01		Holder, LED	AX-7700	1	
2-21	82-744-211-01		Chassis, Front	*	1	
2-22	82-744-002-01		Knob, Push "L"	*	8	
2-23	82-318-025-01		Knob, Power	*	1	
2-24	82-744-001-01		Knob, Push "S"	*	2	
2-25	82-744-311-01		Bracket, Power switch	*	1	
2-26	82-744-312-01		Bracket, Push switch	*	1	
2-27	82-744-696-01		Shield cap	*	1	
2-28	82-744-697-01		Shield fence	*	1	
2-29	82-744-698-01		Pin	*	45	
2-30	82-744-699-01		Heat sink TR	*	1	
2-31	82-744-313-01		Bracket, Scale L	*	1	










EXPLODED VIEW-3



Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
3-1	82-744-216-01		Frame, L	*	1
3-2	82-744-673-01		Band capacitor	*	2
3-3	82-743-274-01		Capacitor groundbar	AX-7700	1
3-4	82-744-315-01		Clamper, Cord bracket	*	1
3-5	82-744-675-01		Clamper cord	*	1
3-6	82-744-317-01		Band, Cord wire	*	1
3-7	82-744-672-01		Terminal board	*	2
3-8	82-744-222-01		Frame R	*	1
3-9	82-744-202-01		Wheel, Drum	*	1
3-10	82-744-318-01		Spring, Dial	*	1
3-11	82-744-319-01		Washer, PCB	*	4
3-12	82-744-320-01		Holder, DIN jack, Terminal board	*	1
3-13	82-744-321-01		Cushion, PCB	*	2
3-14a	82-744-325-01		Chassis, Rear (H model only)	*	1
3-14b	82-744-326-01		Chassis, Rear (C model only)	*	1
3-15	82-744-670-01		Screw, Terminal board	*	1
3-16a	82-743-670-01		AC power cord (E model only)	AX-7700	1
3-16b	82-743-685-01		AC power cord (K model only)	AX-7700	1
3-17	82-743-653-01		Pin jack ass'y	AX-7700	1
3-18a	82-744-331-01		Label, Rating (E model only)	*	1
3-18b	82-743-332-01		Label, Rating (K model only)	AX-7700	1
3-19	82-744-232-01		Band, Bar antenna	*	1
3-20	82-744-333-01		Bracket, IC	*	1
3-21	82-744-219-01		Heat sink M	*	1
3-22	82-744-678-01		Tap stud	*	6
3-23	82-744-626-01		Clip, Fuse	*	6
3-24	82-744-334-01		Bracket, Bar antenna	*	1
3-25	82-744-335-01		Dial cord	*	1
3-26	82-744-337-01		Ground screw	*	1
3-27	82-744-338-01		Screw, RH	*	1
3-28	82-744-336-01		Washer, Plain	*	1
3-29	82-744-674-01		Lug	*	1
3-30a	82-744-680-01		FM antenna coaxial plug (E model only)	*	1
3-30b	82-744-625-01		FM antenna coaxial plug (K model only)	*	1

ELECTRICAL MAIN PARTS LIST

Symbol No.	Part No.	Description
◀ MAIN CIRCUIT BOARD SECTION ▶		
PCB-A	82-743-700-01	Main circuit board
IC101	82-743-618-01	IC, HA-1197
IC201	82-743-617-01	IC, HA-1137W
IC301	82-481-727-01	IC, HA-1156W
IC901,951	82-743-616-01	IC, HA-1457
IC1401	82-744-605-01	IC, SI-1525HD
Q1	87-026-120-01	FET, 3SK46
Q2,3	82-743-624-01	Transistor, KSC1674 (O)
Q201	82-743-626-01	Transistor, KSC838 (O)
Q301,302,352	82-743-627-01	Transistor, KSC945 (Y)
Q401,402,451	82-743-625-01	Transistor, KSC1222 (U)
452		
Q501	82-743-630-01	Transistor, KSD288 (O)
Q502	82-743-622-01	Transistor, KSA708 (Y)
Q503	82-743-629-01	Transistor, KSC1008 (Y)
D101,102,201,301	82-743-633-01	Diode, 1SS53
D501,502,503,504	82-744-606-01	Diode, 1N5173
ZD501	82-743-634-01	Zener diode, RD12E
ZD502,503	82-743-635-01	Zener diode, RD18E
ZD1401	82-743-636-01	Zener diode, RD6.8E
L1	82-743-641-01	FM antenna coil
L2	82-743-643-01	FM RF coil
L3,202	82-743-691-01	Coil, 2.2μH
L4	82-743-644-01	FM OSC coil
L101	82-743-683-01	MW, LW bar antenna coil
L102	82-743-693-01	Coil, 2.2μH
L201	82-743-692-01	Coil, 18μH
L301,501	82-743-690-01	Coil, 470μH
LPF300	82-744-609-01	Low pass filter
C1	82-744-604-01	VC
CF201,202,203	87-008-136-01	FM ceramic filter
T102	82-743-660-01	AM ceramic filter transformer
T103	82-743-649-01	AM IFT
T201	82-743-646-01	FM IFT
T202	82-494-782-01	FM IFT
T203	82-494-783-01	FM IFT
VR401	82-743-609-01	Volume, 250kΩ-W (BALANCE)
VR402,452	82-744-602-01	Volume 250kΩ-B (VOLUME)
VR403,404,453,454	82-744-601-01	Volume, 50kΩ-B (BASS, TREBLE)
SVR101	87-021-363-01	Semi-fixed resistor, 100kΩ-B
SVR301	82-744-628-01	Semi-fixed resistor, 4.7kΩ-B
SVR302	87-021-367-01	Semi-fixed resistor, 47kΩ-B
S1,2,3,4,5,6,7,8,9	82-744-618-01	Push switch (PHONO, AUX, LW, MW, FM, LOUDNESS, MODE, MUTING, TAPE MONITOR)
		< Resistors >
 R501	82-743-606-01	82Ω 1/4W Fuse resistor
 R505	82-743-607-01	330Ω 1/4W Fuse resistor
R423	82-744-612-01	150Ω 1/4W Metal film
◀ SWITCH-1 CIRCUIT BOARD SECTION ▶		
PCB-B	82-743-701-01	Switch-1 circuit board
Q601,602	82-743-626-01	Transistor, KSC838 (O)
D601	82-743-633-01	Diode 1SS53

Symbol No.	Part No.	Description
TC601,602,603,604	82-743-681-01	Trimmer
T601	82-744-616-01	LW OSC coil
T602	82-743-645-01	MW OSC coil
◀ LED CIRCUIT BOARD SECTION ▶		
PCB-C	82-744-631-01	LED circuit board
IC701	82-027-261-01	IC, LB-1405
IC702	82-743-615-01	IC, TA-7504S
Q701,706	82-743-627-01	Transistor, KSC945 (Y)
Q702,707,708	82-743-629-01	Transistor, KSC1008 (Y)
Q703,705	82-743-623-01	Transistor, KSA733 (Y)
Q704	82-743-622-01	Transistor, KSA708 (Y)
D701,702	82-743-633-01	Diode, 1SS53
LED701	87-027-544-01	Light emitting diode, LN-05202P (SIGNAL)
LED702,703	82-743-638-01	Light emitting diode, SL-139B (TUNING)
LED704	87-027-543-01	Light emitting diode, LN-317GP (TUNING)
LED705	87-027-542-01	Light emitting diode, LN-217RP (FM STEREO)
ZD701	82-743-636-01	Zener diode RD-6.8E
		< Resistors >
R722	82-743-605-01	680Ω 1W Metal film
R724	82-743-602-01	680Ω 2W Metal film
◀ SWITCH-2 CIRCUIT BOARD SECTION ▶		
PCB-D	82-743-703-01	Switch-2 circuit board
S1401,1402	82-743-620-01	Push switch (SPEAKER)
L1401,1451	82-743-694-01	Coil, 2.2μH
◀ FUSE CIRCUIT BOARD SECTION ▶		
 PCB-E	82-743-704-01	Fuse circuit board
 FX501,502	82-744-622-01	Fuse, "T" 5A
	82-744-629-01	Fuse label, "T" 5A
 FX503	82-743-678-01	Fuse, "T" 1.6A
	82-743-715-01	Fuse label, "T" 1.6A
	82-744-626-01	Fuse clamp
◀ DIN CIRCUIT BOARD SECTION ▶		
PCB-F	82-743-705-01	DIN circuit board
Q801,851	82-743-625-01	Transistor, KSC1222 (L)
J10	82-743-673-01	DIN jack (TAPE REC/PLAY)
◀ MISCELLANEOUS ▶		
 TX501	82-744-617-01	Power transformer (E model only)
 TX501	82-744-623-01	Power transformer (K model only)
 SX501	82-744-619-01	Power switch
	82-743-670-01	AC power cord (E model only)
	82-743-685-01	AC power cord (K model only)
J1,2,3,4	82-743-653-01	Pin jack ass'y (PHONO, AUX)
J9	82-743-652-01	Jack 6.3φ (PHONES)
J13,14	82-743-672-01	DIN speaker jack
DS501,502	82-743-614-01	Pilot lamp, 8V, 250mA
	82-744-670-01	Antenna terminal

Symbol No.	Part No.	Description
	82-743-710-01	Speaker terminal
	82-744-680-01	FM antenna coaxial plug (E model only)
	82-744-625-01	FM antenna coaxial plug (K model only)
	< Capacitors >	
C503,504	82-744-603-01	6800pF 35V Electrolytic
⚠ C509,510	82-743-712-01	4700pF Ceramic (E model only)
⚠ C509,510	82-743-719-01	4700pF Ceramic (K model only)

⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty	
1	82-744-853-01		Printed indiv., Packing	*	1	
2	82-744-855-01		Cushion L, Printed indiv.	*	1	
3	82-744-856-01		Cushion R, Printed indiv.	*	1	
4	82-744-857-01		Poly-vinyl sack (for case)	*	1	
5	87-056-009-41		Distributors list		1	
6	87-056-008-11		Label, AC power cord (K model only)		1	
7	82-744-903-01		Instructions booklet (E model only)	*	1	
8	87-744-902-01		Instruction booklet (K model only)	*	1	

SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A

B

C

D

E

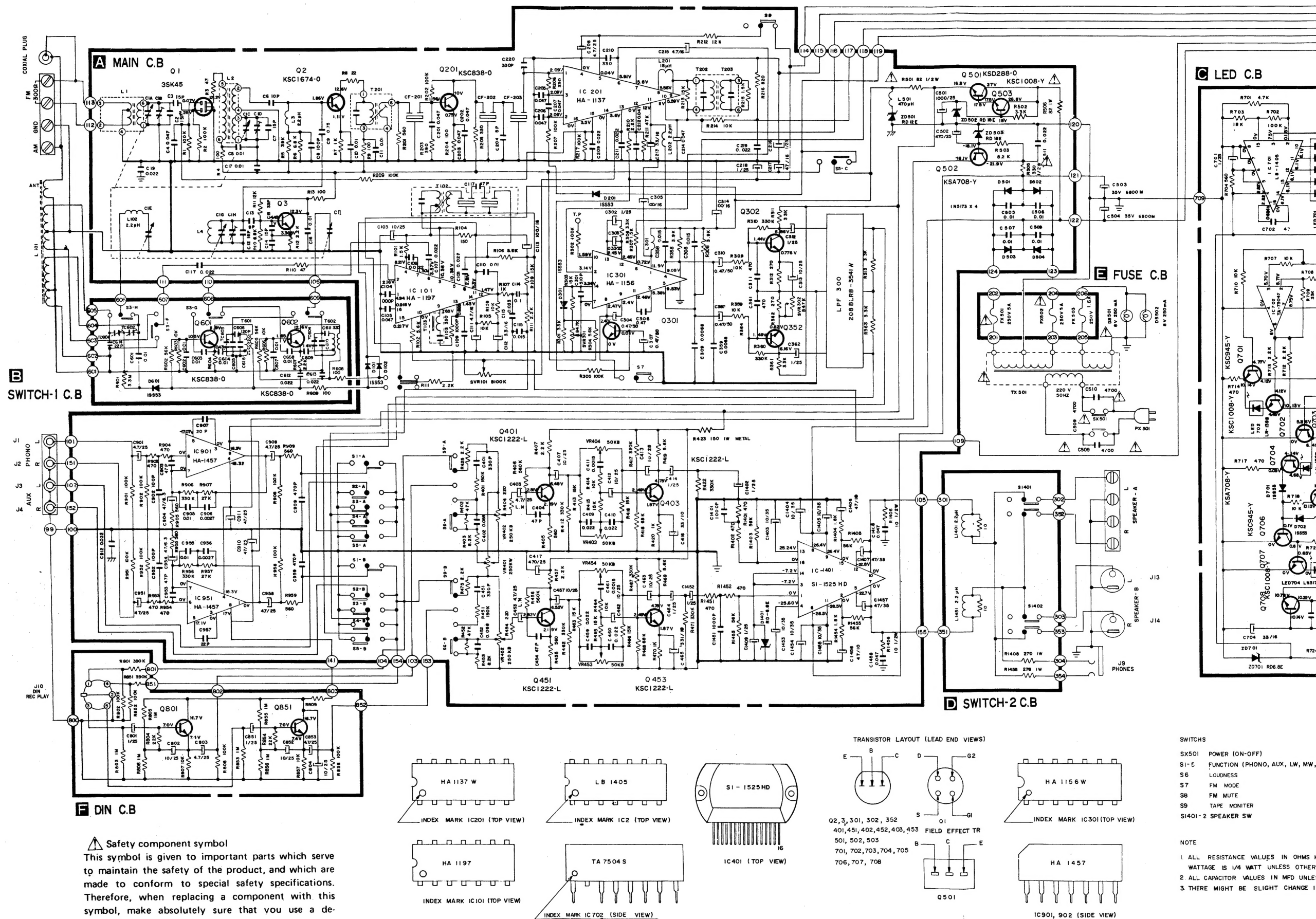
F

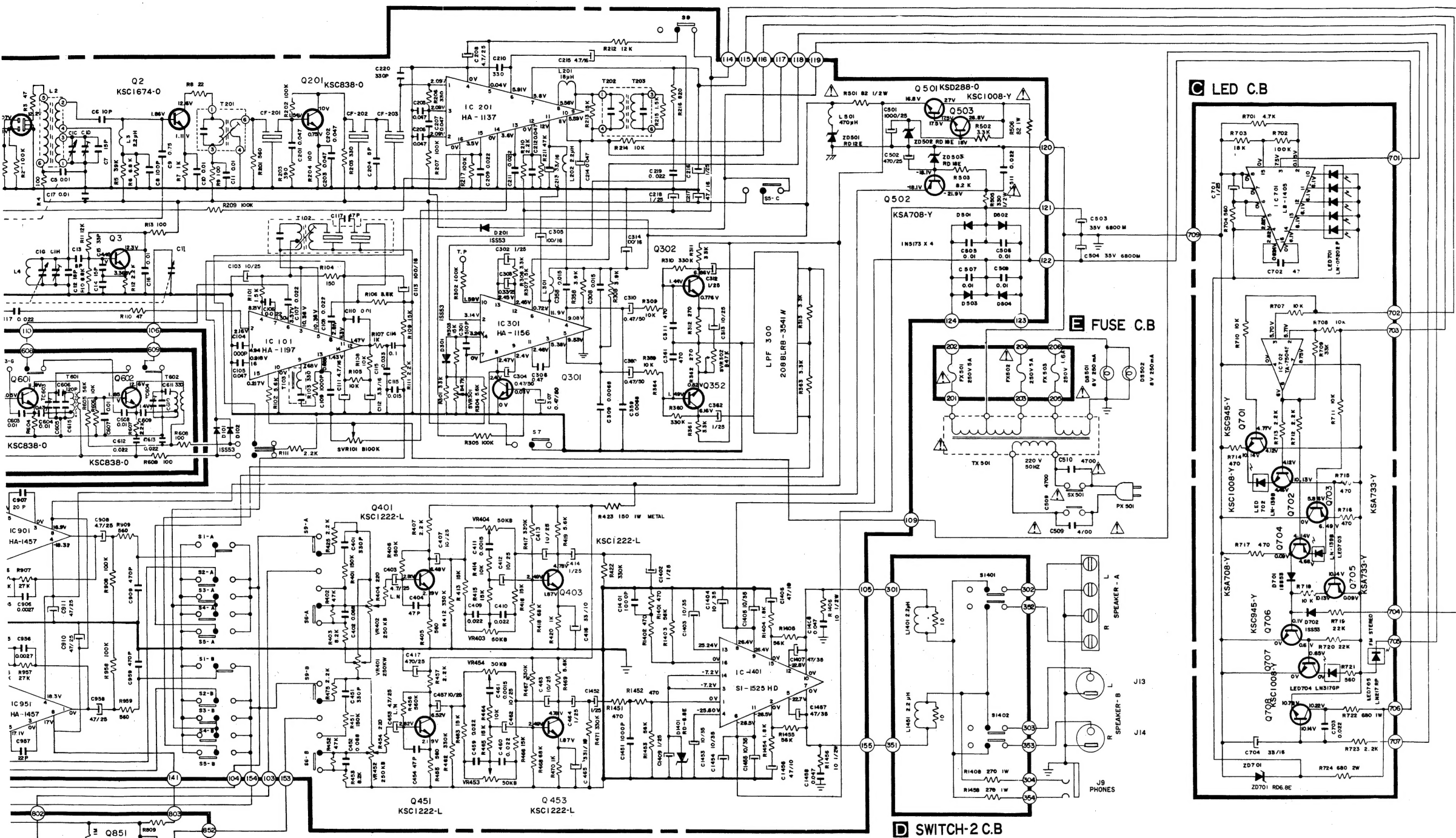
G

H

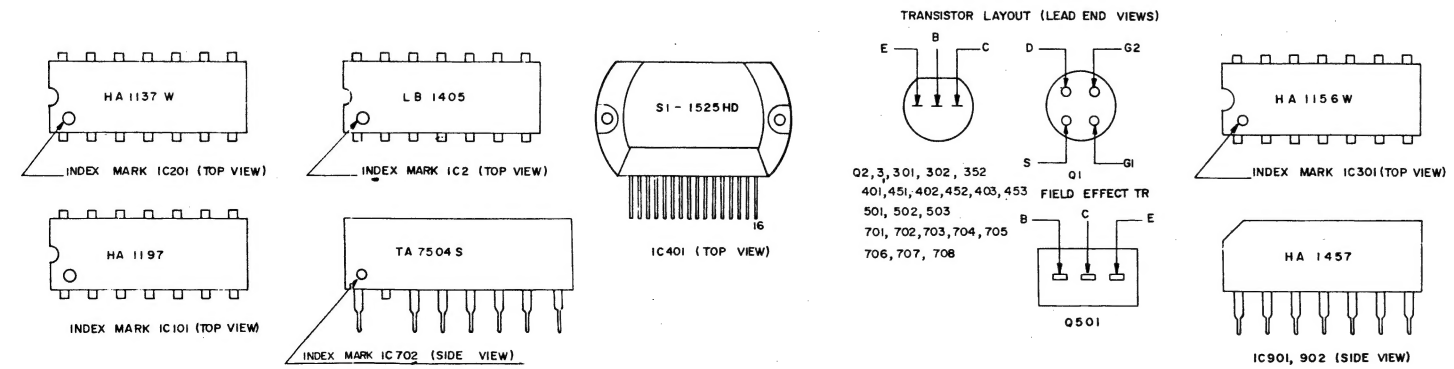
I

J





symbol
important parts which serve
of the product, and which are
special safety specifications.
sing a component with this
ly sure that you use a de-



- SWITCHES
- SX501 POWER (ON-OFF)
 - SI-5 FUNCTION (PHONO, AUX, LW, MW, FM)
 - S6 LOUDNESS
 - S7 FM MODE
 - S8 FM MUTE
 - S9 TAPE MONITOR
 - SI401-2 SPEAKER SW
- NOTE
- 1. ALL RESISTANCE VALUES IN OHMS K=KILO OHMS, M=MEG OHMS WATTAGE IS 1/4 WATT UNLESS OTHERWISE SPECIFIED.
 - 2. ALL CAPACITOR VALUES IN MFD UNLESS OTHERWISE SPECIFIED.
 - 3. THERE MIGHT BE SLIGHT CHANGE IN ACTUAL SET.

1.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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